TECHNISCHE UNIVERSITÄT
CHEMNITZ

Faculty of Electrical Engineering and Information Technology
Institute of Information Technology
Professorship Circuit and System Design

GEFÖRDERT VOM
Bundesministerium
für Bildung
und Forschung

Simple Indoor Tagging
An Indoor Mapping Approach for OSM

Thomas Graichen

INNOPROFILE
UNTERNEHMEN REGION
Die BMBF-Innovationsinitiative Neue Länder

Outline

1. Motivation
2. Previous Mapping Approaches
3. Simple Indoor Tagging
4. How-To-Map with JOSM and the indoorhelper Plugin
5. Mapping Examples

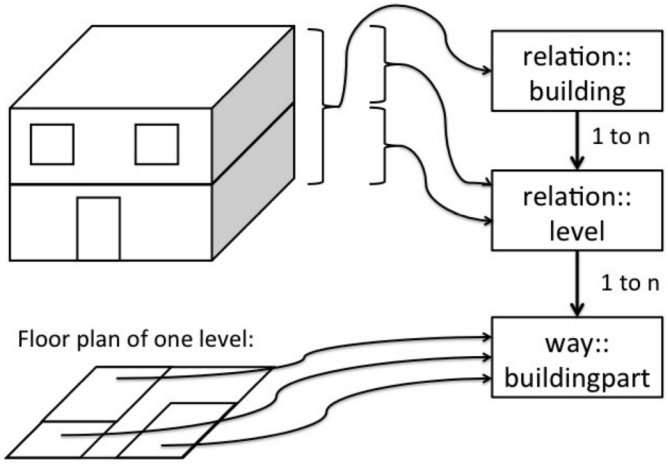
Motivation

- Maps are not limited to the outdoor world
- Commercial map suppliers started/established indoor map support
- Why not also support indoor maps in OSM?
- So, a common scheme for indoor mapping is required

INNOPROFILE UNTERNEHMEN REGION Die BMBF-Innovationsinitiative Neue Länder

Previous Mapping Approaches

- Different mapping approaches with intensive usage of relations:
  - **IndoorOSM**, Compound Facility



Observations:

- Relational model fits well for the structure of buildings
- ... but is inconvient to map

Previous Mapping Approaches - First evolution F3DB

Rethinking the existing mapping schemes: Why do we really need relations?

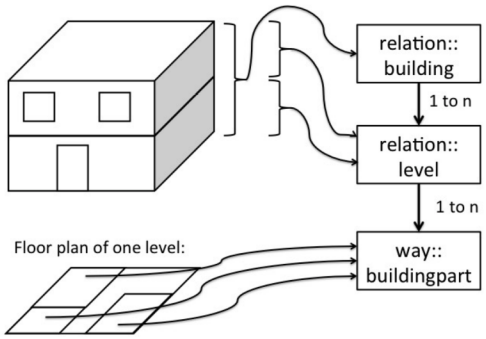
- Top level/first relation can be considered as a building container -> all members are part of this buidling

➔ Avoid this by analysing the geometry of the building ouline:

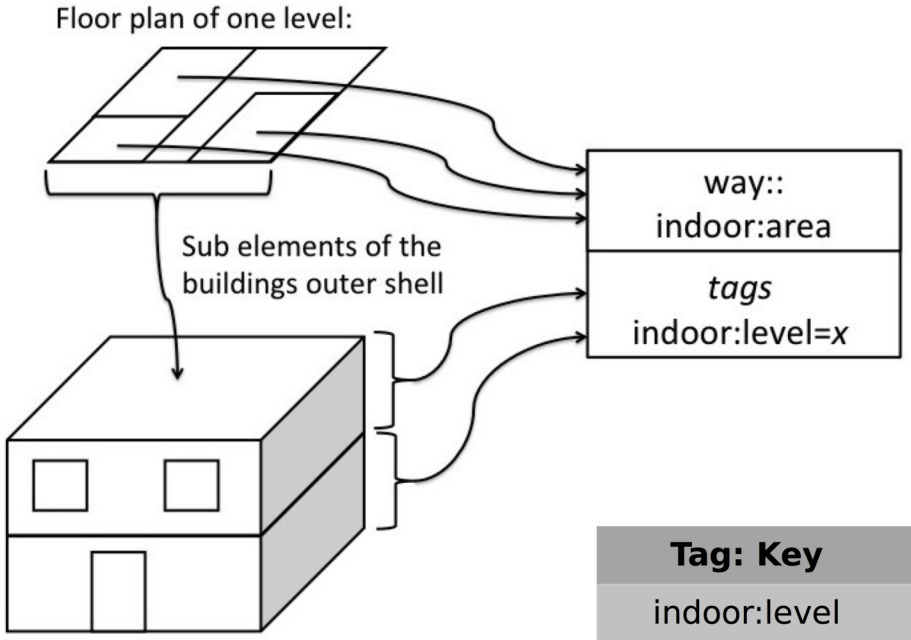
  ➔ Consider all these indoor elements as member of a building, which are located inside the outline

- Next relations are containers for elements of one certain level

➔ Membership to a level could also be done by using a level tag for each indoor element



Previous Mapping Approaches - First evolution F3DB

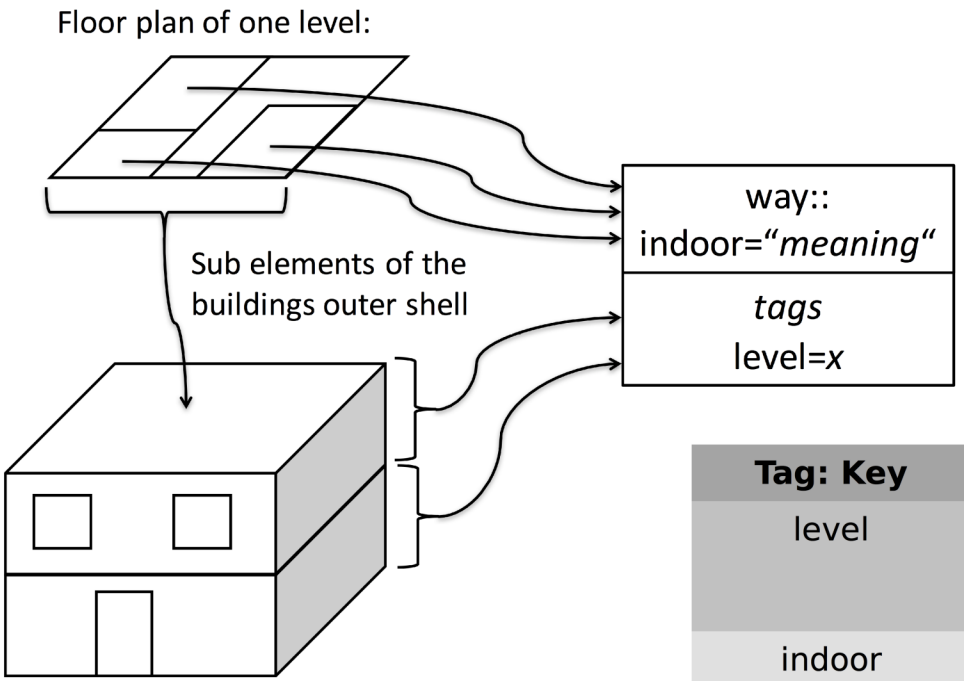


http://wiki.openstreetmap.org/wiki/F3DB

Tag: Key	Tag: Value	Purpose	Applies To
indoor:level	-2, -1, 0, 1, 2, etc.	membership to level	indoor ways and POIs
indoor:area	room, wall, stairway, etc.	area usage	ways
indoor:door	yes	room entrance	nodes
indoor:entrance	yes	building entrance	nodes
indoor:highway	service, footway	indoor routing	ways

Now: Simple Indoor Tagging

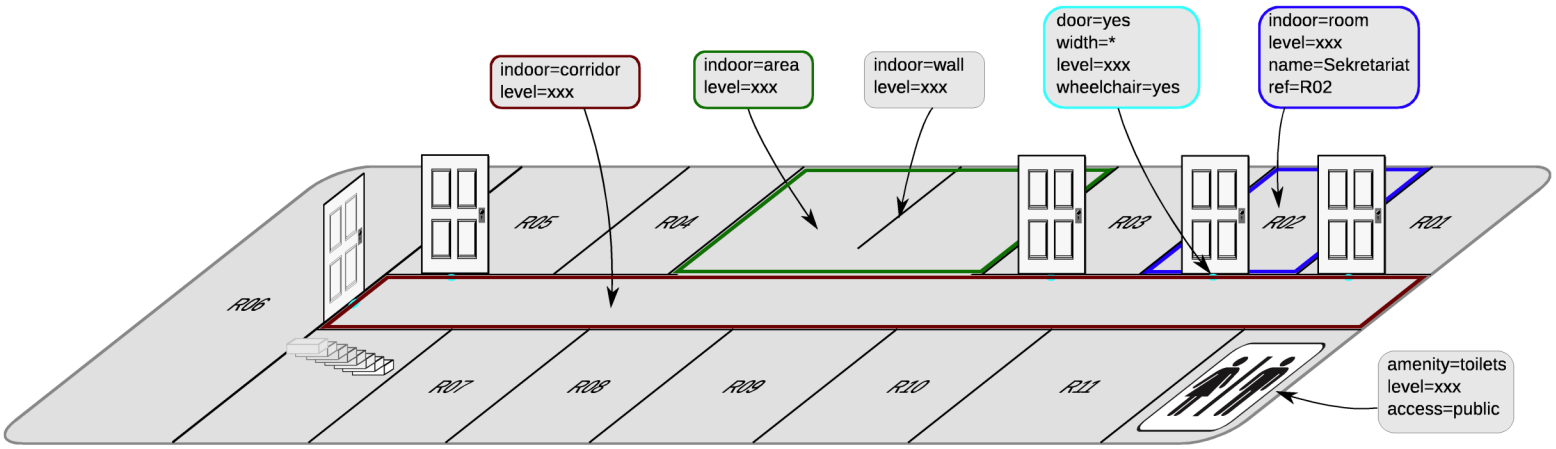
https://wiki.openstreetmap.org/wiki/Simple_Indoor_Tagging



Tag: Key	Tag: Value	Purpose	Applies To
level	-2, -1, 0, 1, 2, etc.	membership to level & building	indoor ways and POIs
indoor	room, wall, stairway, etc.	area usage	ways
door	yes	room entrance	nodes
entrance	yes	building entrance	nodes
highway	service, footway	indoor routing	ways

Simple Indoor Tagging - Further example

Existing OSM tags can be used by combining them with the level tag

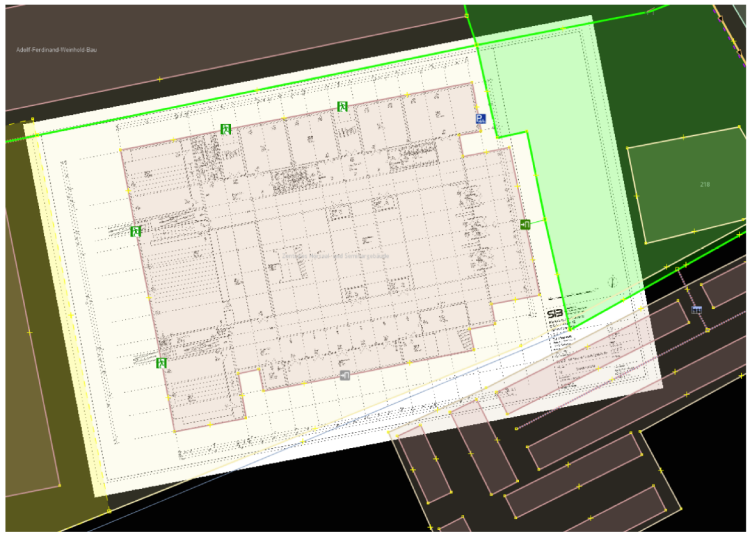


Ref.: OSM-Wiki Simple Indoor Tagging, user: peda

Mapping - Using existent floor plans

Fitting of given indoor plans (CAD, floor plans) into the outdoor outline of a building:

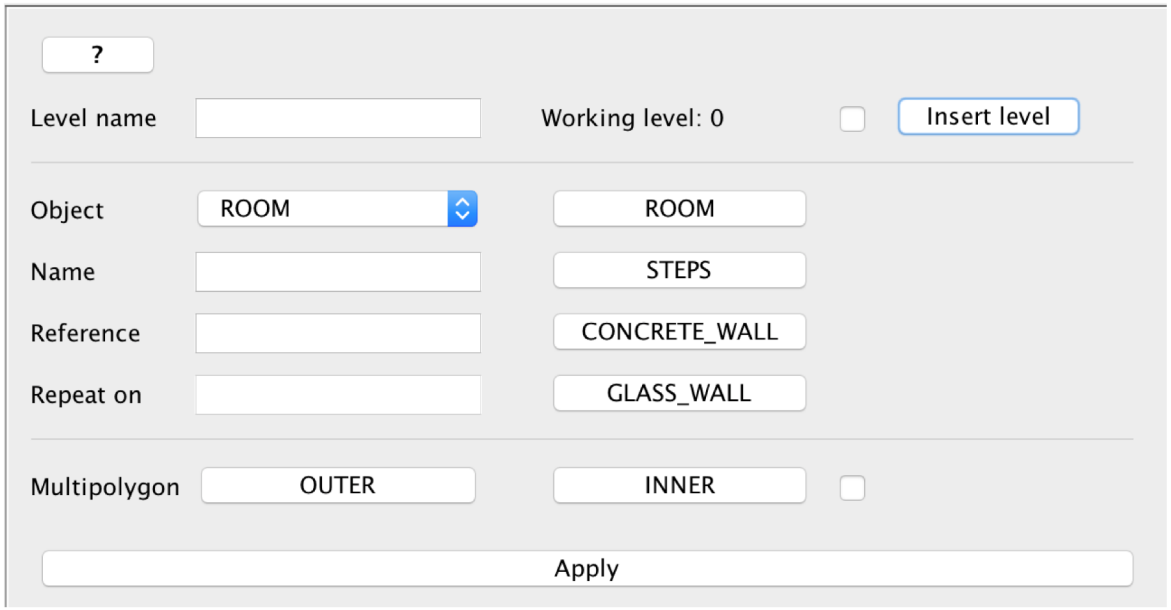
1. Get a floor plan of the building, ask for mapping permission
2. Ensure correctness of building outline:
    1. Check airial images, use a GPS to determine the building's corners
3. Use the PicLayer plugin to insert the given floor plan
    1. Scale and rotate the given floor plan, check for correct lengths and proportions
    2. Align the floor plan with the building outline
4. Start mapping :-)



Mapping - JOSM plugin indoorhelper

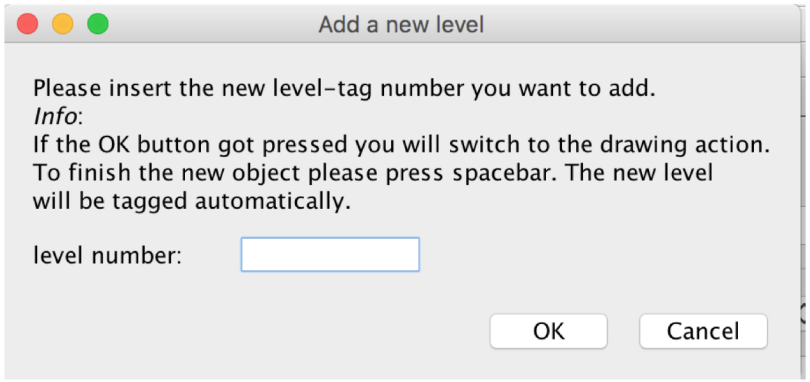
JOSM Plugin to:

- Automatically apply the level tag based on autofiler selection
- Provide a preset of commonly used indoor tags, e.g. rooms, walls, etc.
- Link for online help: wiki.openstreetmap.org/wiki/JOSM/Plugins/indoorhelper



Mapping - Drawing of polygons on each level

- Use the insert level button to create a new level
- Autofilter is automatically selected for the newly created level
- Map this level of the building

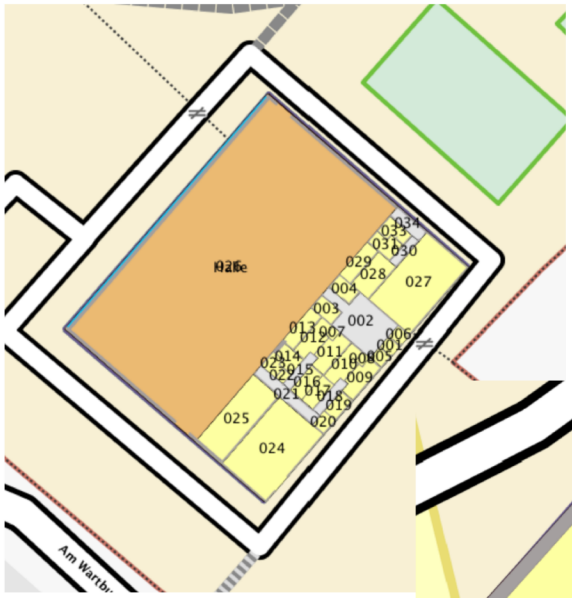


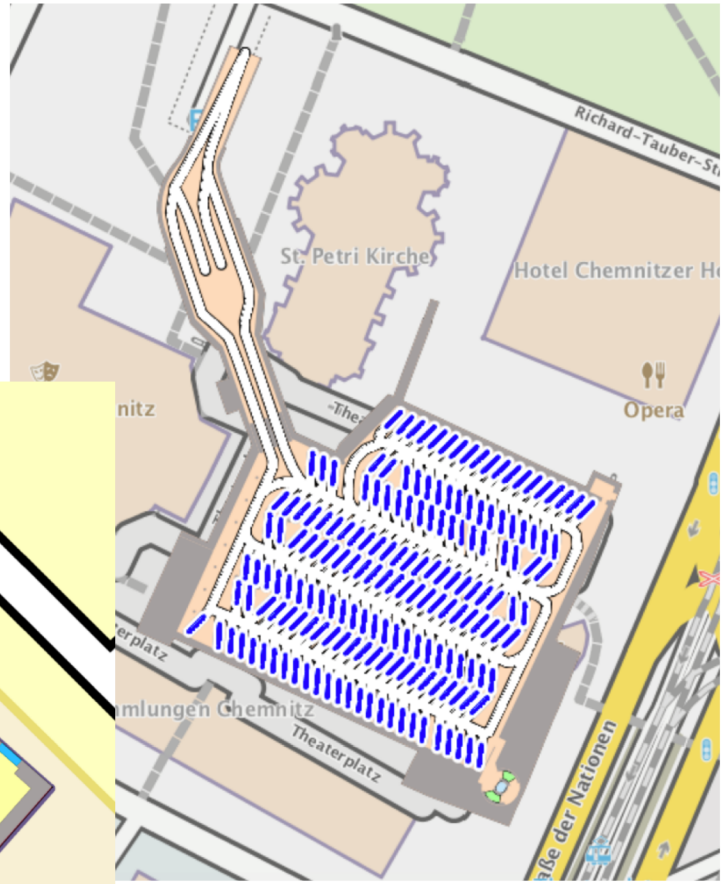
Mapping Examples

- Mapped items get rendered by plugin's internal MapCSS theme

INNOPROFILE UNTERNEHMEN REGION
Die BMBF-Innovationsinitiative Neue Länder

Mapping Examples





INNOPROFILE UNTERNEHMEN REGION
Die BMBF-Innovationsinitiative Neue Länder

Thank you for your attention

Contact:
OSM nickname: grait
thomas.graichen@etit.tu-chemnitz.de
thomas@mailbox.org

GEFÖRDERT VOM
Bundesministerium für Bildung und Forschung

This work is funded by the german federal ministry of education and research under the following ID: 03WKP53E.

INNOPROFILE UNTERNEHMEN REGION Die BMBF-Innovationsinitiative Neue Länder